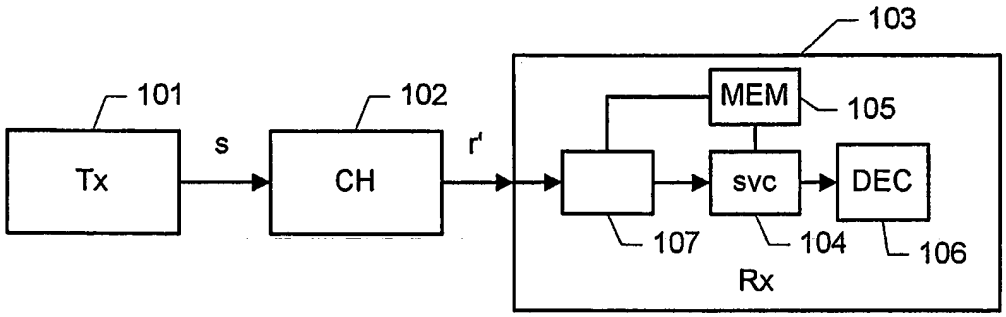
103
101
102
s
r'
MEM
105
Tx
CH
svc
DEC
107
104
106
Rx

Fig. 1a

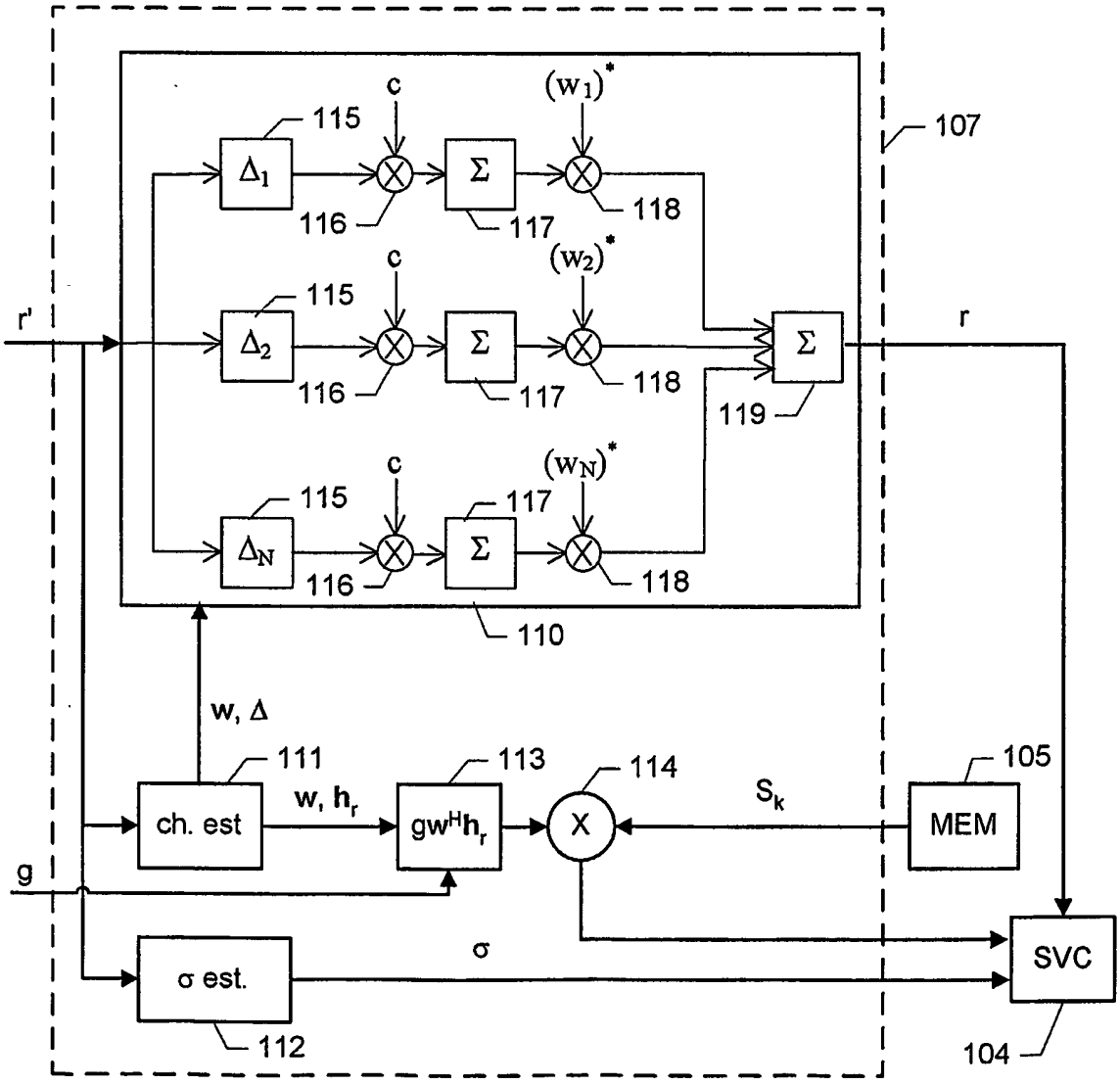
107
c
$(w_1)^*$
115
Δ_1
Σ
116
117
118
$(w_2)^*$
Δ_2
r'
r
119
$(w_N)^*$
Δ_N
110
w, Δ
111
113
114
105
ch. est
w, h_r
gw^Hh_r
X
S_k
MEM
g
σ
σ est.
SVC
112
104

Fig. 1b

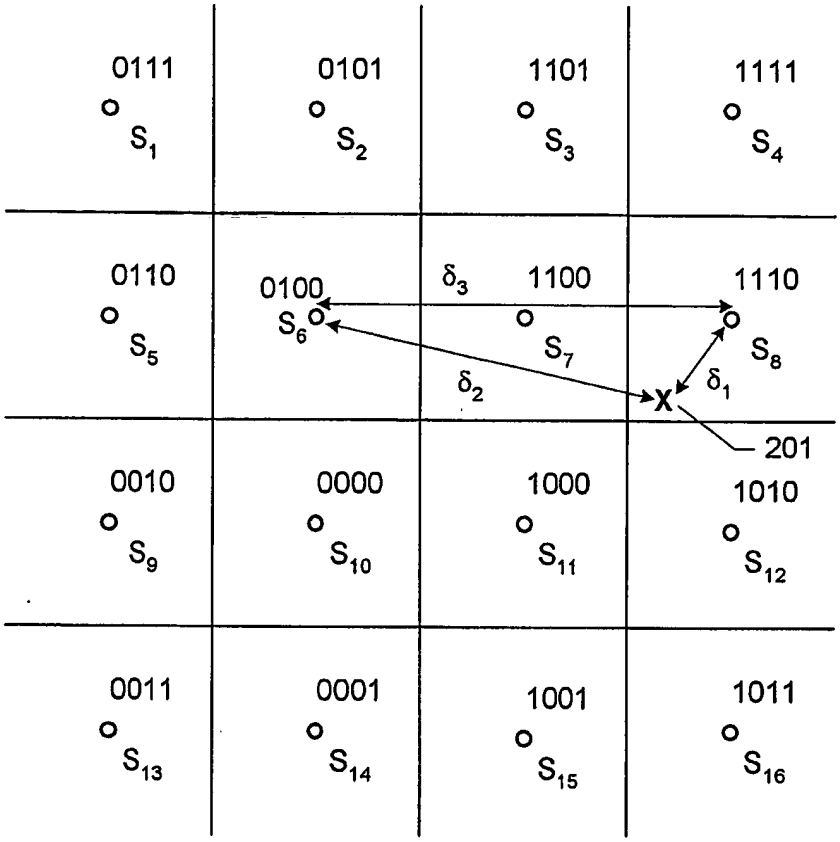
0111
S1
0101
S2
1101
S3
1111
S4
0110
S5
0100
S6
δ3
1100
S7
1110
S8
δ2
δ1
X
201
0010
S9
0000
S10
1000
S11
1010
S12
0011
S13
0001
S14
1001
S15
1011
S16

Fig. 2

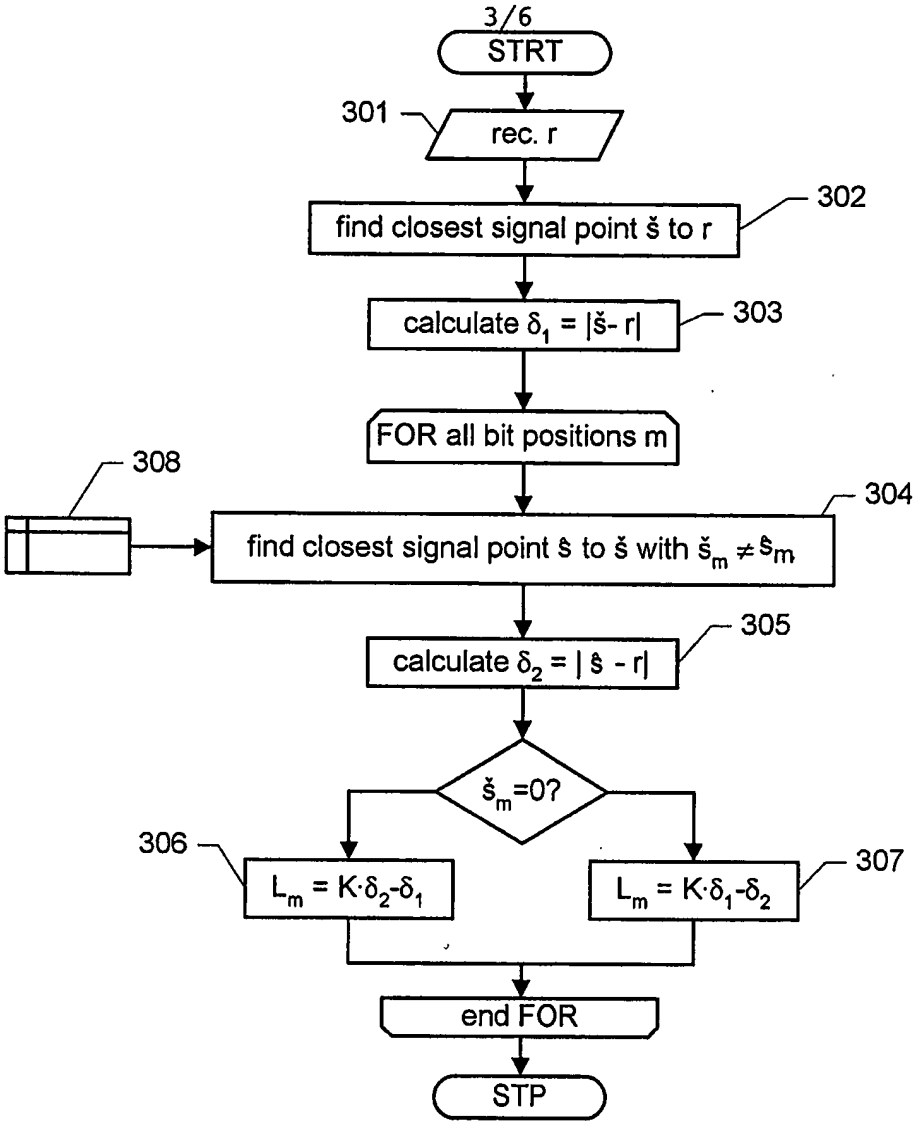

Fig. 3

402

	m = 1	m = 2	...	$m = \log_2(M)$
$\check{s} = S_1$	$\hat{s} = S_3$	$\hat{s} = S_9$	...	$\hat{s} = S_5$
$\check{s} = S_2$	$\hat{s} = S_3$	$\hat{s} = S_{10}$	...	$\hat{s} = S_6$
⋮	⋮	⋮	⋱	⋮
$\check{s} = S_M$	$\hat{s} = S_{14}$	$\hat{s} = S_8$	...	$\hat{s} = S_{12}$

308

Fig. 4

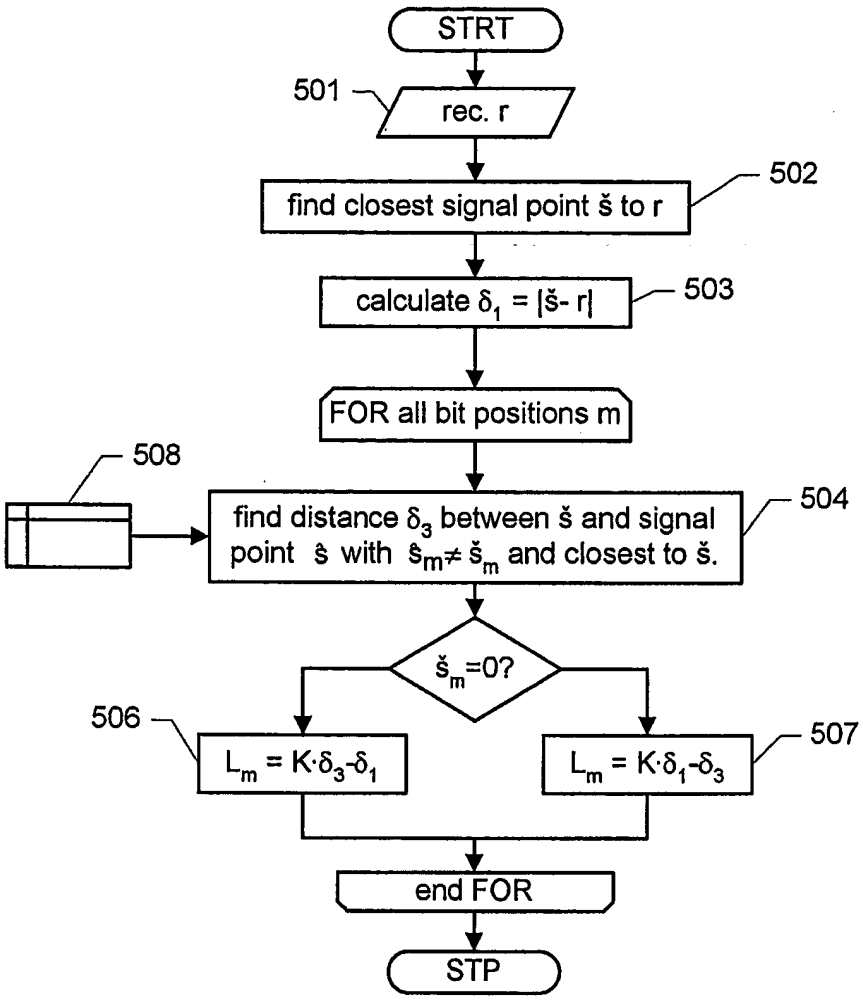

Fig. 5

	m = 1	m = 2	…	$m = \log_2(M)$
S_1	$d_{1,1}$	$d_{1,2}$	…	$d_{1,\log(M)}$
S_2	$d_{2,1}$	$d_{2,2}$	…	$d_{2,\log(M)}$
⋮	⋮	⋮	⋱	⋮
S_M	$d_{M,1}$	$d_{M,2}$	…	$d_{M,\log(M)}$

508

Fig. 6

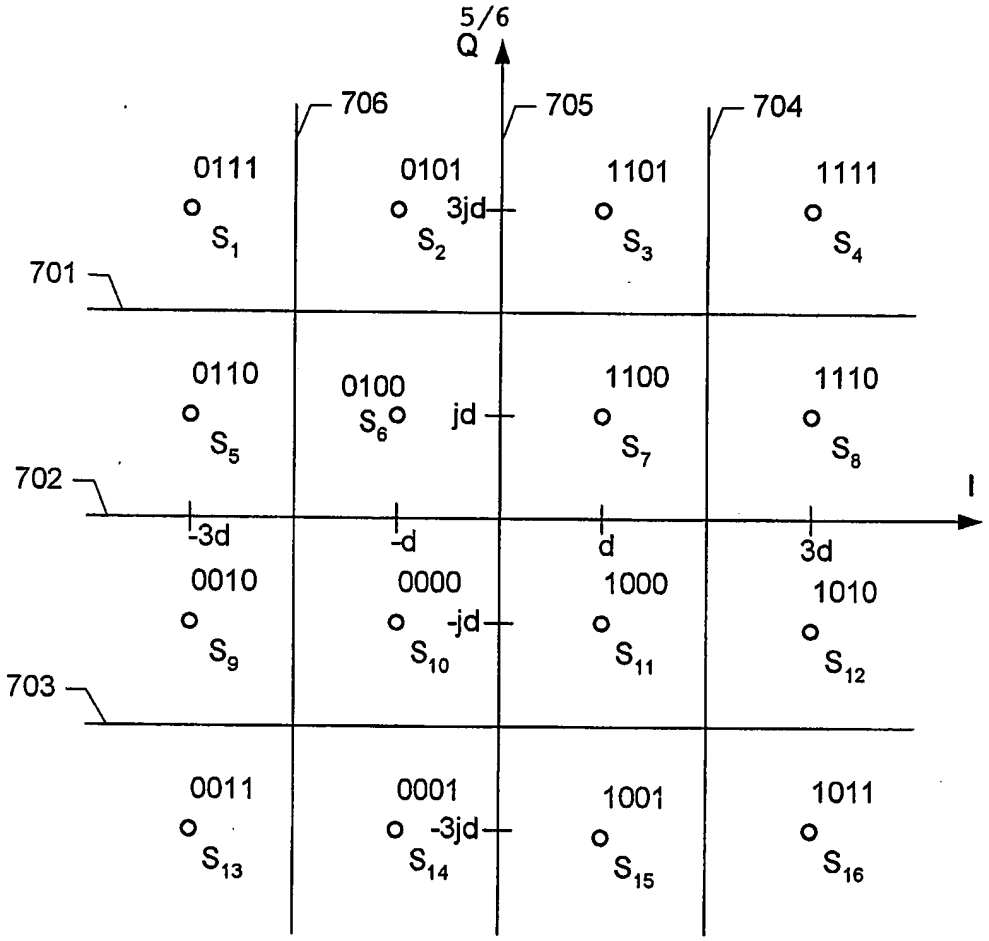
5/6
Q
706
705
704
0111
0101
1101
1111
3jd
S1
S2
S3
S4
701
0110
0100
1100
1110
jd
S5
S6
S7
S8
702
I
-3d
-d
d
3d
0010
0000
1000
1010
-jd
S9
S10
S11
S12
703
0011
0001
1001
1011
-3jd
S13
S14
S15
S16

Fig. 7

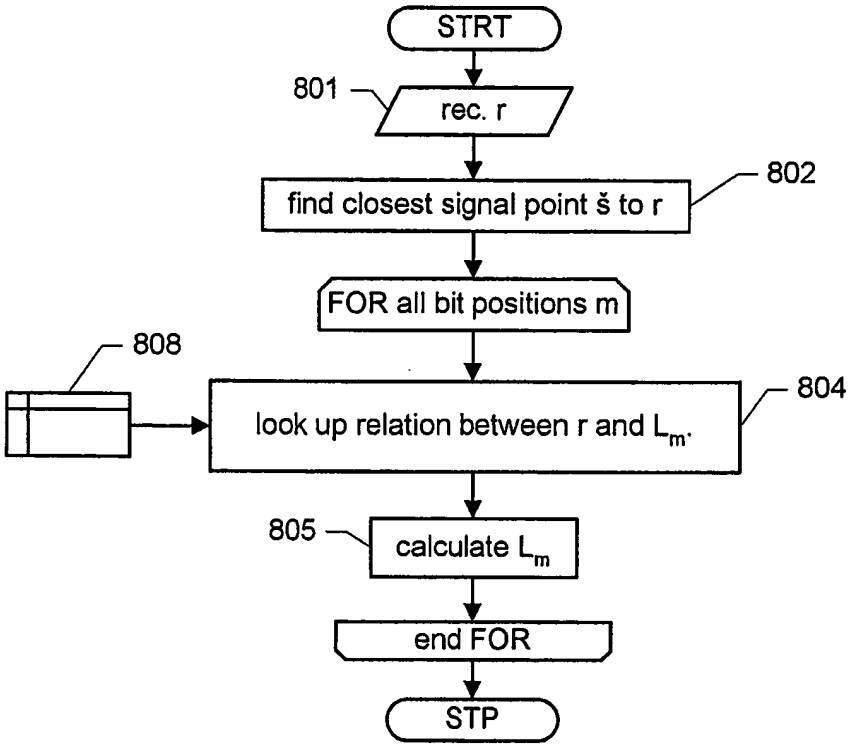

Fig. 8

808

Decision region	L_1	L_2	L_3	L_4
S_1	$4K\cdot(2ad-2d^2)$	$4K\cdot(-2bd+2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_2	$4K\cdot(ad)$	$4K\cdot(-2bd+2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_3	$4K\cdot(-ad)$	$4K\cdot(-2bd+2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_4	$4K\cdot(-2ad+2d^2)$	$4K\cdot(-2bd+2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_5	$4K\cdot(2ad-2d^2)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_6	$4K\cdot(ad)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_7	$4K\cdot(-ad)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_8	$4K\cdot(-2ad+2d^2)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_9	$4K\cdot(2ad-2d^2)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{10}	$4K\cdot(ad)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{11}	$4K\cdot(-ad)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{12}	$4K\cdot(-2ad+2d^2)$	$4K\cdot(-bd)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{13}	$4K\cdot(2ad-2d^2)$	$4K\cdot(2bd-2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{14}	$4K\cdot(ad)$	$4K\cdot(2bd-2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{15}	$4K\cdot(-ad)$	$4K\cdot(2bd-2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$
S_{16}	$4K\cdot(-2ad+2d^2)$	$4K\cdot(2bd-2d^2)$	$4K\cdot(ad-2d^2)$	$4K\cdot(bd-2d^2)$

Fig. 9